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Chapter 19: Plan & Profile Sheet Clipping

Overview

This chapter will describe the methods used to create plan and profile sheets. The following workflows will show the user how to set up sheets using GEOPAK Plan and Profile Sheet Composition tool. This application has evolved over the years, allowing for profile stair stepping, ability to automatically clip the graphics with notches (Title block, project information, etc.), customized sheet numbering and station adjustment on sheets.



Note: CFLHD policy is to create one sheet per file. This will allow the use of plan and profile labelers when detailing the sheets.

Plan/profile sheet creation

GEOPAK will create single plans, double plans and plan/profile sheets. These sheets are generally created at 1000 scale Metric or 2000 scale Metric and 1:100 scale English and 1:200 scale English. Workflow 1 will describe the steps necessary to create a plan/profile sheet. Station range, drawing areas, and many other variables are contained in the sheet library files **English_sheets.psl** and **Metric_sheets.psl**. The sheet library file contains many values specific to CFLHD such as cell library names and locations, specific sheet cells to be used, drawing scales, and a variety of text parameters and cannot be modified by the user.

The sheet library files for CFLHD projects and are located on the CFLHD network at:

N:\Standards\V8_RESOURCE\X_30\Standards\Sheet_Layout\metric or English



For CFLHD employees, the unit correct .psl file will be automatically attached while opening a design file using the Project Configuration (*.pcf).

For consultants, CFLHD sheet library files are available through the **V8_Resource.zip** download. Download the file and extract the file to the server or local drive, keep the V8_Resource directory structure intact. The unit correct .psl file will be attached when opening a design file using the project configuration file.



Clip Sheets and Motif Files

Prior to using the GEOPAK Plan and Profile Sheet Composition tool, three files need to be created. **Clip.dgn**, **Plan_motif.dgn** and **Profile_motif.dgn** should be created to assure proper setup of plan and profile sheets. Outlined below are the uses and instructions for creating each file.

Clip.dgn

Creating a drawing to display the sheet boundaries will allow the user to always have a visual representation of how each sheet will layout in relation to the others. If the design changes, having this file will allow the user to move sheets around to better fit any design changes. To create this sheet, make a copy of the 2D seed file and reference the **chain** and **profile** into this new file. By referencing the overall design back into the **Clip.dgn** file, any future design changes will be displayed in this new file, instantly showing the designer which sheets, if any, will need to be adjusted. Sheet cell libraries

English_pnp_sheet_layout.cel or **Metric_pnp_sheet_layout.cel** should be attached to the **Clip.dgn** file prior to clipping sheets, this will provide the ability to automatically clip the graphics with notches for project Information (state, project, sheet number) to be unobstructed.

Motif files

Motif files act as seed files for clipping plan and profile sheets. Motif file should be a blank file with the proper reference files attached, and the proper levels for each file turned on or off. The **Plan and Profile Sheet Composition tool** will then use these files when clipping each sheet and each clip sheet will have the correct files displayed with the correct levels on. For example, if the plan view in a final plan sheet needs to show overall design, mapping, raster images, ROW, etc., with specific levels on or off for each of these files, you would only need to setup this combination once in the motif file. This information would then be used to create each sheet. These sheets should be named **Plan_motif.dgn** and **Profile_motif.dgn**. To create **Plan_motif.dgn**, make a copy of the 2D seed file and attach each reference file that should be shown in the plan view, and turn on or off any levels to make the display look exactly like the final plan sheets in plan view. Repeat these steps for the **Profile_motif.dgn**, referencing the profile sheet into the 2D seed file.



Workflow 1: Plan/Profile sheets using GEOPAK

1. *Open the Clip.dgn and invoke Plan and Profile Sheet Composition tool from Project Manager by selecting the button for Plan & Profile Sheets. Select a Run or create a new Run.*

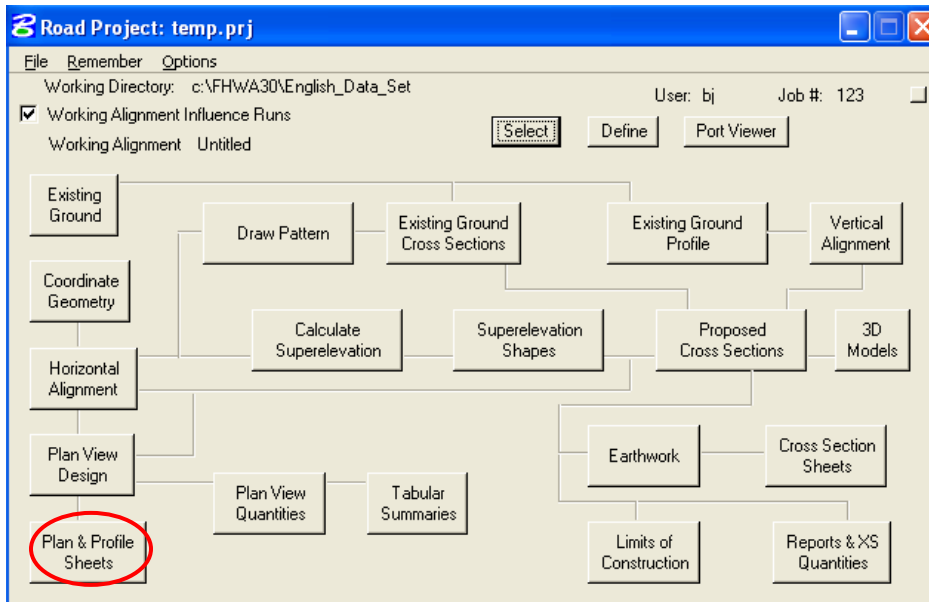


Figure 19-1: Project Manager

The example below is focused on clipping an English project using 100 Scale Plan/Profile sheets.

2. *The following Plan Sheet Layout dialog box appears. Select 100 Scale P_P using the drop down arrow, and adjust the Scale field to 2.0000 ft/in as shown below:*

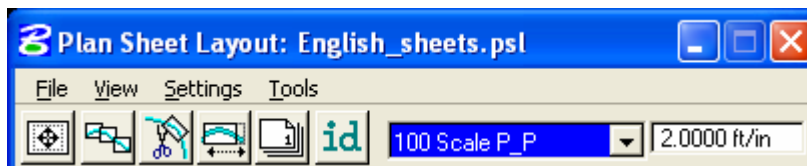


Figure 19-2: Plan Sheet Layout Dialog

3. *From the pulldowns, select Settings > Sheet Layout and adjust the Sheet Layout Settings as shown below and press OK:*

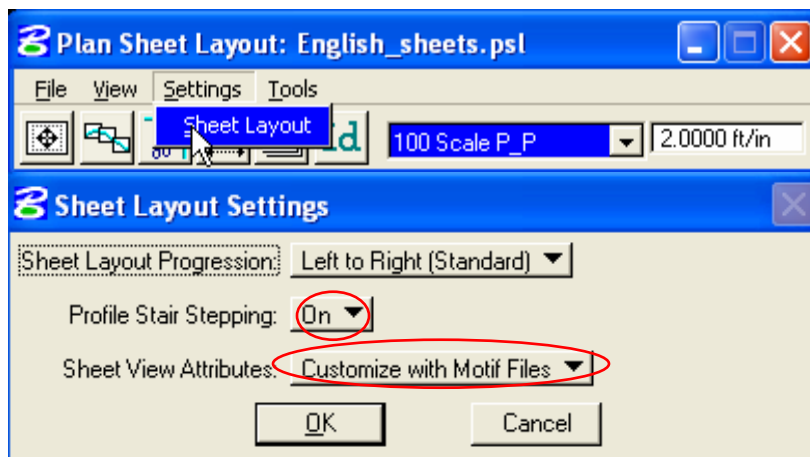


Figure 19-3: Sheet Layout Settings

4. Invoke the Sheet Composition dialog by clicking on the Sheet Composition icon from the Plan Sheet Layout dialog as shown below:

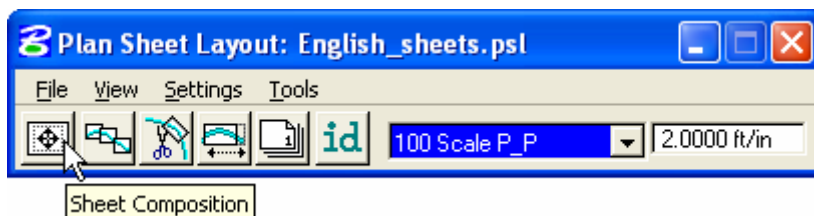


Figure 19-4: Plan Sheet Layout Dialog

5. Modify the Sheet Composition dialog box as shown below:

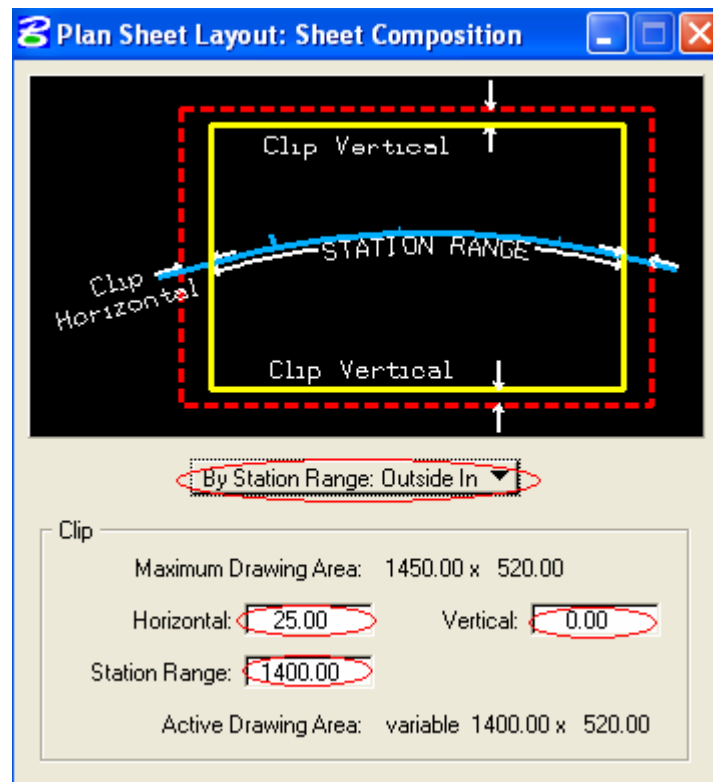


Figure 19-5: Sheet Composition

Above are the dialog settings for a 100 Scale P_P "sheet style". Other "sheet styles" have been created for English and Metric projects. The settings can be found at the end of this documentation... To go directly there, click [HERE](#).

6. *Invoke the Layout Sheets tools by selecting the Layout Sheets icon from the Plan Sheet Layout dialog as shown below:*

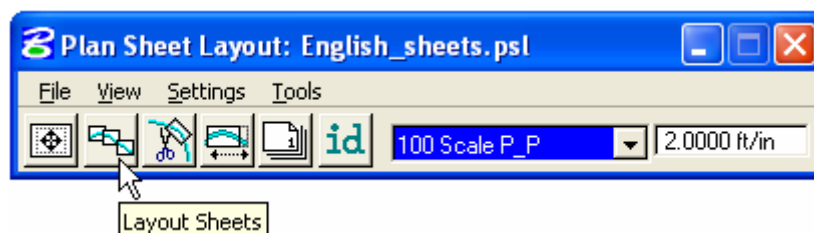


Figure 19-6: Plan Sheet Layout Dialog



Port	Type	Dependency	Alignment	Offset	Motif File
1	Plan	Alignment		0.00	
2	Profile	Alignment		0.00	

Job: 123 Multiple Sheets

Begin Station: 328+08.33 R 1 Extend: -8.33

End Station: 350+00.00 R 1 Extend: 0.00

Layout 2 Sheets

Figure 19-7: Layout Settings

7. Select *Multiple Sheets* from the dialog box and Select the GPK file by keying it into the "Job:" box, or by browsing using the file open icon.
8. To populate the *Plan Port Data* dialog box, double click anywhere along the row for Port 1 in the *Layout Settings* dialog box and the following dialog box will be invoked.

Chain: A Offset: 0.00

Motif File: C:\FHWA30\English_Data_Set\PLAN_MOTIF.DGN

OK Cancel

Figure 19-8: Plan Port Data

9. Select the correct Chain and the appropriate Plan Motif file. Press OK. If the Motif File has not been created, create Motif files using the second icon as shown below:

Chain: A Offset: 0.00

Motif File:

OK Cancel

Create Motif File

Figure 19-9: Plan Port Data - Create Motif File



Motif file should be created from a 2D seed file. After creating the Motif file, make sure to attach the required reference files.

10. To populate the Profile Port Data dialog box, double click anywhere along the row for Port 2 in the Layout Settings dialog box and the following dialog box will be invoked.

Figure 19-10: Profile Layout

11. If a profile cell exist for the file that is referenced to the Clip.dgn file then click on Identify cell, place data point on the profile cell and accept. Profile Data dialog fields can be populated using this method, or manually enter in the required information.
12. Select the appropriate Profile Motif file. Press OK. If the Motif file has not been created, create Motif files using a 2D seed file as outlined in step 9.



13. *GEOPAK will calculate the number of sheets to layout, number of sheets calculated will be placed on the button at the bottom right of the Layout Settings dialog box. The extend distance filed will allow the user to enter a value that will shift the clipping shapes backwards or forwards a given distance. If the number of sheets is acceptable, press the Layout 8 Sheets button and GEOPAK will draw clipping shapes into the drawing.*

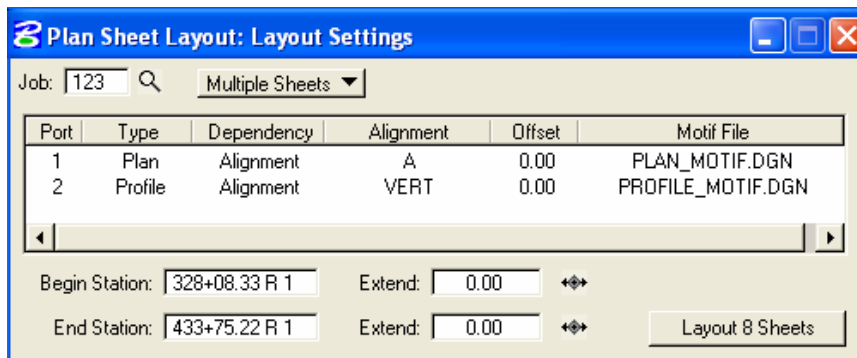


Figure 19-11: Layout Settings

In order for the data to be clipped correctly, use the Sheet Layout Modify Tools. Two most common types of modification supported are sliding the sheets and modifying the drawing area. The drawing area cannot be increased in Length (Horizontal) or Height (Vertical) to exceed the Drawing Area setup in the sheet library.

14. *Once the clipping shapes are placed, for extremely curved chains and steep vertical curves it may be necessary to modify the clipping shapes. To invoke the Modify tools, use the Modify Sheets icon, from the Plan Sheet Layout dialog, as shown below:*

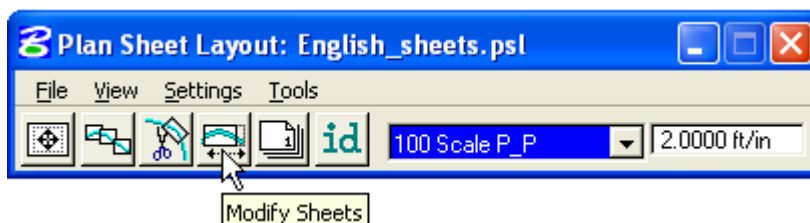


Figure 19-12: Plan Sheet Layout Dialog



Figure 19-13: Modify Sheet Layout-Plan

15. Identify the Sheet (Clipping Shape) to be modified by clicking on the ID button and then data pointing the clipping shape or simply select it from the pick list, via the down arrow.

Figure 19-14: Modify Sheet Layout-Profile



NOTE: The application is intelligent enough to know whether a Plan clipping shape or Profile clipping shape has been identified. When a Profile clipping shape is identified, the "Sheet Chord Offset" field changes to "Bottom Elevation", (as shown above). When modifying the vertical position of a Profile clipping shape, toggle "Bottom Elevation" ON, type in the desired "bottom of the shape" elevation, or press **Dynamic** and move the shape up or down.

Drawing area cannot be increased horizontally or vertically to exceed the drawing area setup in the Sheet Library.



16. Use the Sheet Number Manager tool to number sheet to CFL standards. To invoke the Sheet Number Manager tool, use the Sheet Number Manager icon, from the Plan Sheet Layout dialog, as shown below:

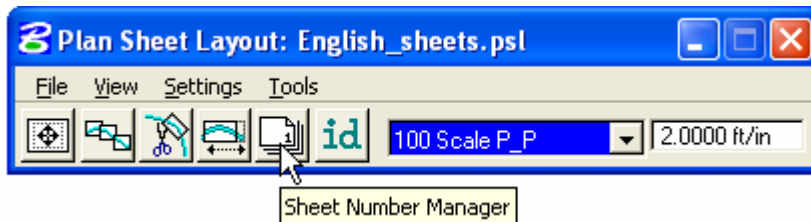


Figure 19-15: Plan Sheet Layout Dialog

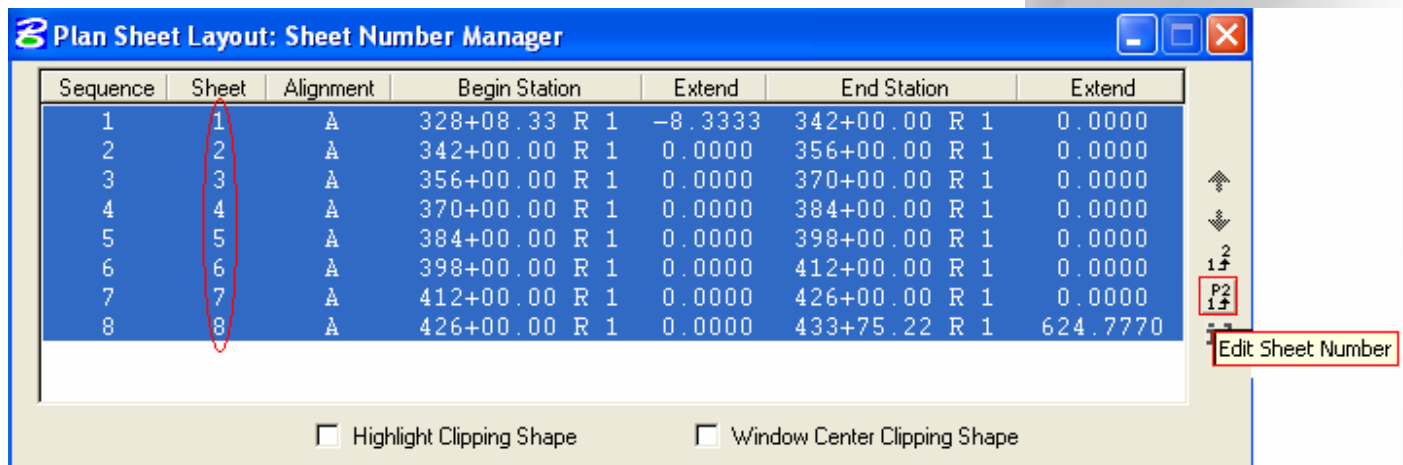


Figure 19-16: Sheet Number Manager

17. Click inside the white area anywhere on row one, hold down the shift key and click a second time anywhere on the last row. Once all rows are selected, click on Edit Sheet Number as shown above.
18. For CFL specific sheet numbering scheme where the sheets are numbered in sequence beginning with D1, complete the Edit Sheet Number dialog as shown below and press OK:



Figure 19-17: Edit Sheet Number

19. When OK is pressed the Sheet Number Manager dialog will appear as shown below:

Sequence	Sheet	Alignment	Begin Station	Extend	End Station	Extend
1	D1	A	328+08.33 R 1	-8.3333	342+00.00 R 1	0.0000
2	D2	A	342+00.00 R 1	0.0000	356+00.00 R 1	0.0000
3	D3	A	356+00.00 R 1	0.0000	370+00.00 R 1	0.0000
4	D4	A	370+00.00 R 1	0.0000	384+00.00 R 1	0.0000
5	D5	A	384+00.00 R 1	0.0000	398+00.00 R 1	0.0000
6	D6	A	398+00.00 R 1	0.0000	412+00.00 R 1	0.0000
7	D7	A	412+00.00 R 1	0.0000	426+00.00 R 1	0.0000
8	D8	A	426+00.00 R 1	0.0000	433+75.22 R 1	624.7770

Figure 19-18: Sheet Number Manager

20. Once the clipping shapes are placed and satisfactorily modified, invoke the Clip Sheets tool, Select the Clip Sheets icon from the Plan Sheet Layout dialog as shown below:

Figure 19-19: Plan Sheet Layout Dialog



Figure 19-20: Clip Sheets

21. Select the working directory in the Output File box. Type the sheet name prefix in the second field, sheet name prefix should follow the naming convention set in Chapter 3 of the CFL CADD standards Manual.



NOTE: The software appends the beginning sheet number to the "Sheet Name Prefix". You most likely will have to rename this (or these) file(s) later.

22. Select Orientation to Rotate Reference. Reference file data is rotated and moved into correct position with each of the sheet cells.
23. Select Sheet per File to 1. CFLHD policy is to create one sheet per file.



24. Select the Sheet Range required from the pick list, using the drop down arrows. Use the Sheet Number Manager Tool to renumber sheets to CFL specific sheet numbering scheme, (such as D1, D2, D3....) as explained earlier.
25. Enter Labels and Annotation. An example of a completed Clip Sheets dialog is shown below (illustrating the results of the completed Labels and Annotation fields)... when completed press Process Sheets.

Plan Sheet Layout: Clip Sheets

Output File

Directory: C:\FHWA\30\English_Data_Set\

Sheet Name Prefix: pnp88-1 pnp88-11.dgn

Orientation: Rotate Reference

Sheets per File: 1 Model: Active

Sheet Range Begin: 1 End: 8

Labels and Annotations

Sheet Title: KEYS VIEW ROAD

Project Number: PRA JOTR 13(1)

Match Line: XXX+XXX

☐ Auxiliary Sheet Annotations Sample

☐ Create Digital InterPlot Plot Set

IPS File: c:\FHWA\30\w30_PROJECT_TEST\untitled.ip

Sheet Type: Plan Open InterPlot Organizer

Process Sheets

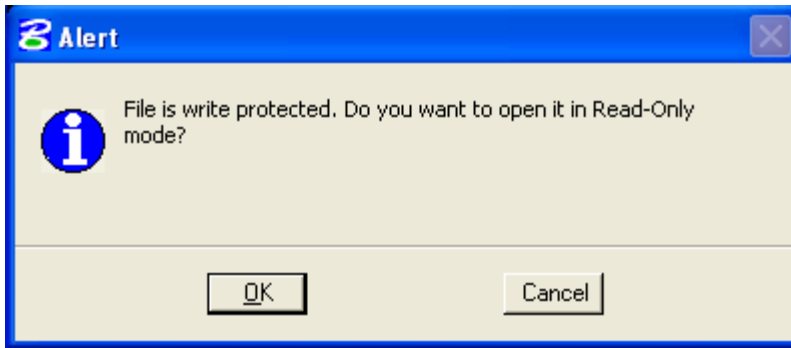
REG	STATE	PROJECT	SHEET NO.	TOTAL SHEETS
16	ST	KEYS VIEW ROAD PRA JOTR 13(1)	D1	

COPY TO SHEET FROM REFERENCE FILE AND EDIT FOR PROJECTS

CUSTOMIZE SHEET NUMBER (D1, D2, etc.) USING SHEET NUMBER MANAGER

Figure 19-21: Clip Sheets

Since the CFL reference sheet cell drawing is write protected. The following dialog box below will appear. Just click **OK**.



Click on a Sheet Style link (below) for recommended CFL Sheet Composition Dialog Settings:

METRIC Sheet Styles:

[1000 Scale PLAN & PROFILE](#)

[2000 Scale PLAN & PROFILE](#)

[2000 Scale DOUBLE PLAN](#)

[2000 Scale SINGLE PLAN](#)

[2000 Scale SINGLE PROFILE](#)

ENGLISH Sheet Styles:

[50 Scale PLAN & PROFILE](#)

[100 Scale PLAN & PROFILE](#)

[200 Scale PLAN & PROFILE](#)

[200 Scale DOUBLE PLAN](#)

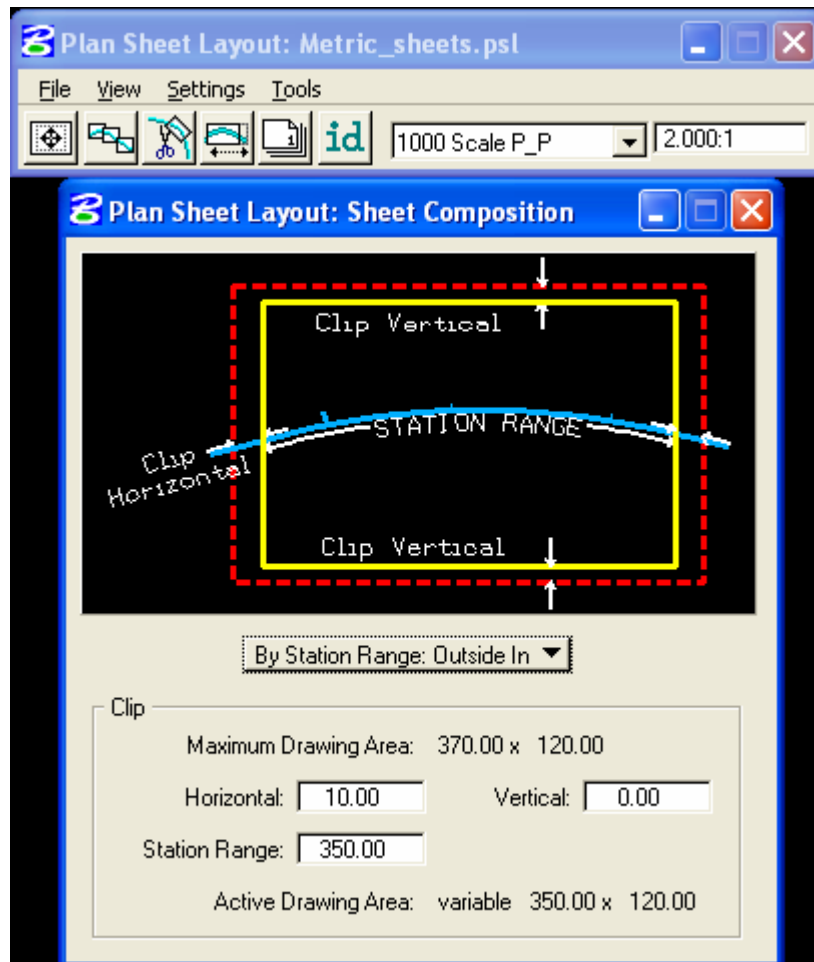
[200 Scale SINGLE PLAN](#)

[200 Scale SINGLE PROFILE](#)



METRIC SHEET STYLE

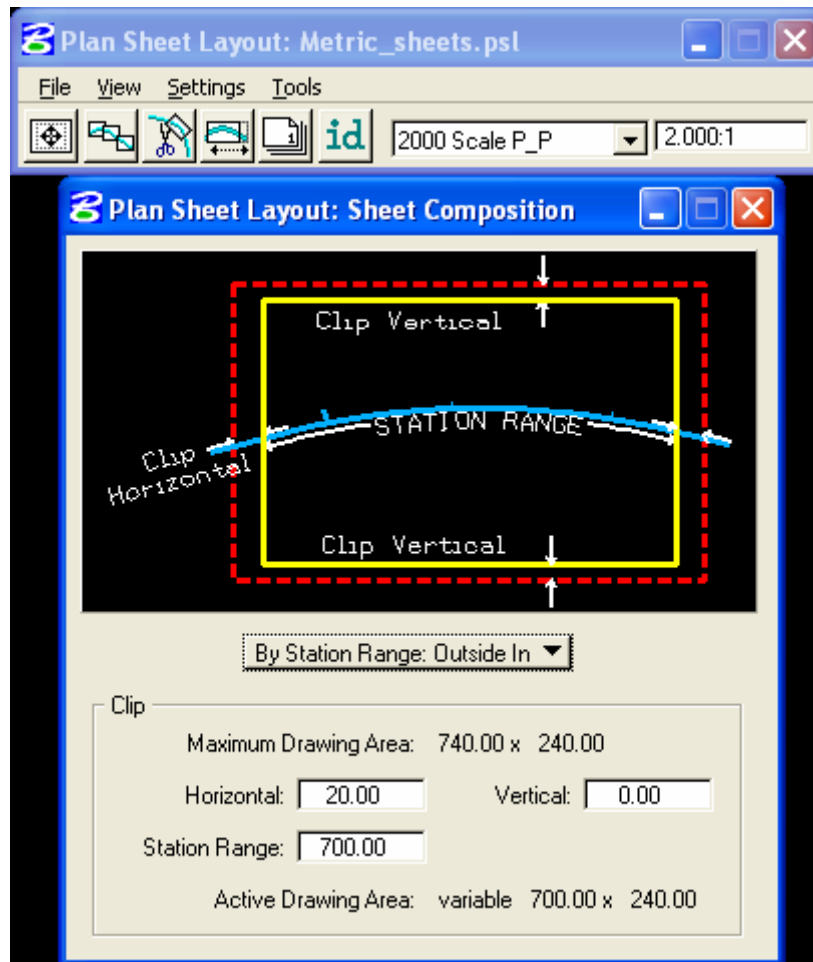
1000 Scale P_P





METRIC SHEET STYLE

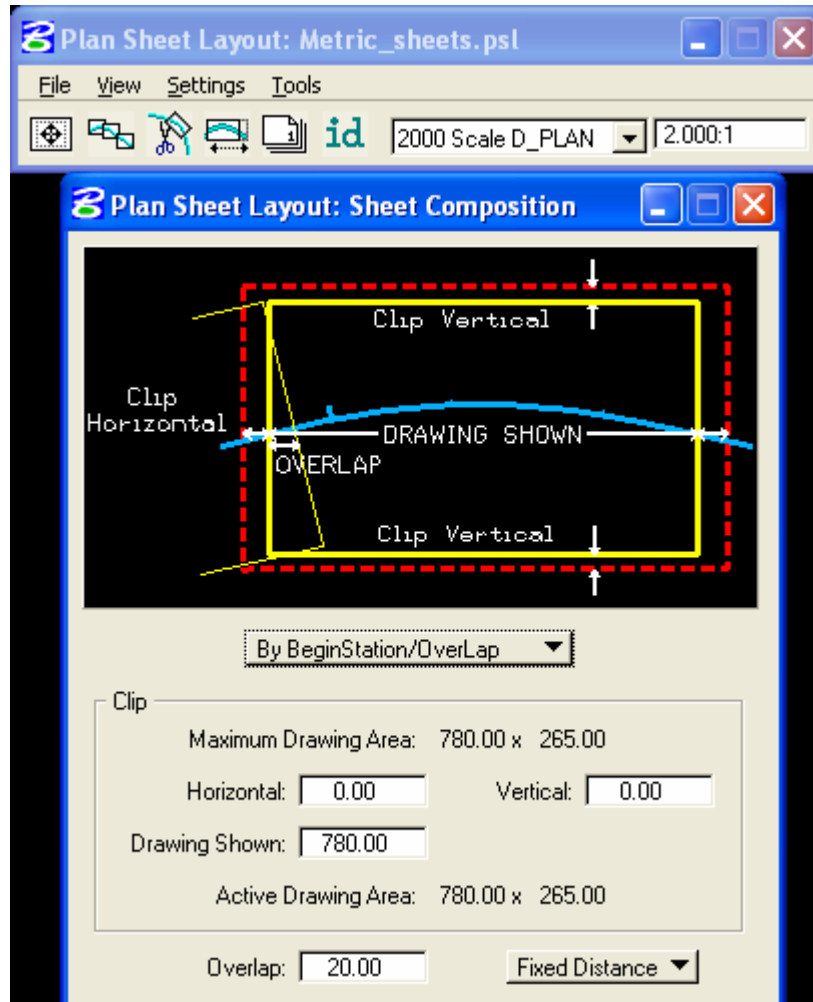
2000 Scale P_P





METRIC SHEET STYLE

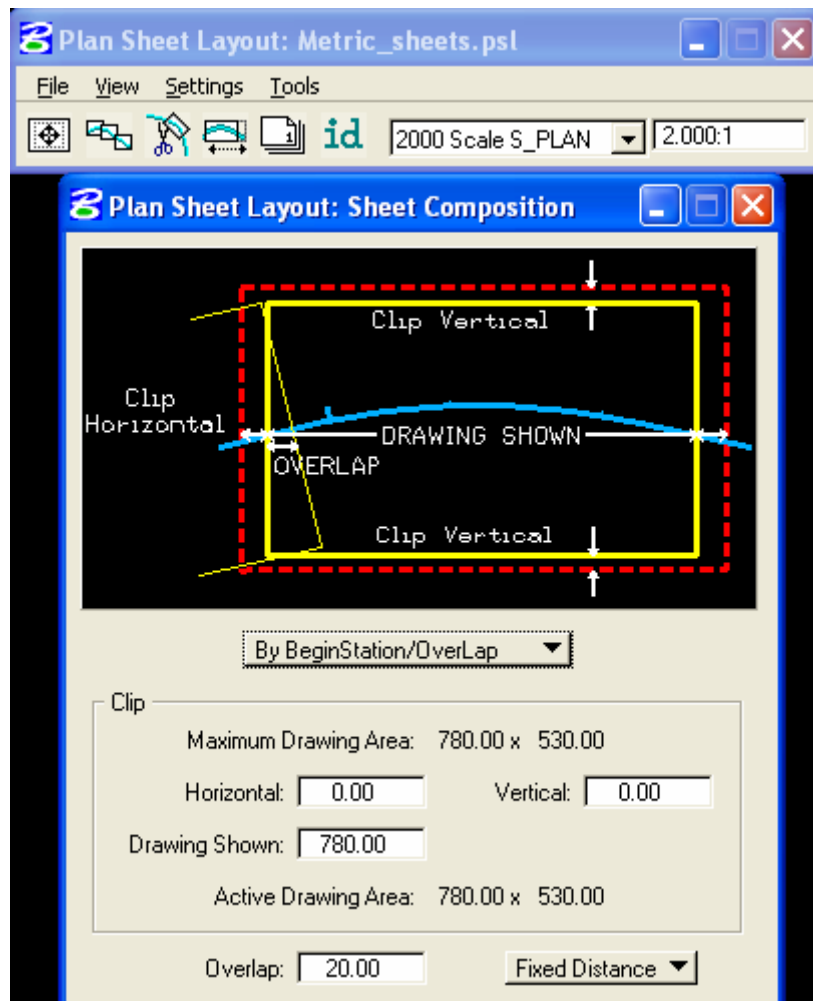
2000 Scale DOUBLE PLAN





METRIC SHEET STYLE

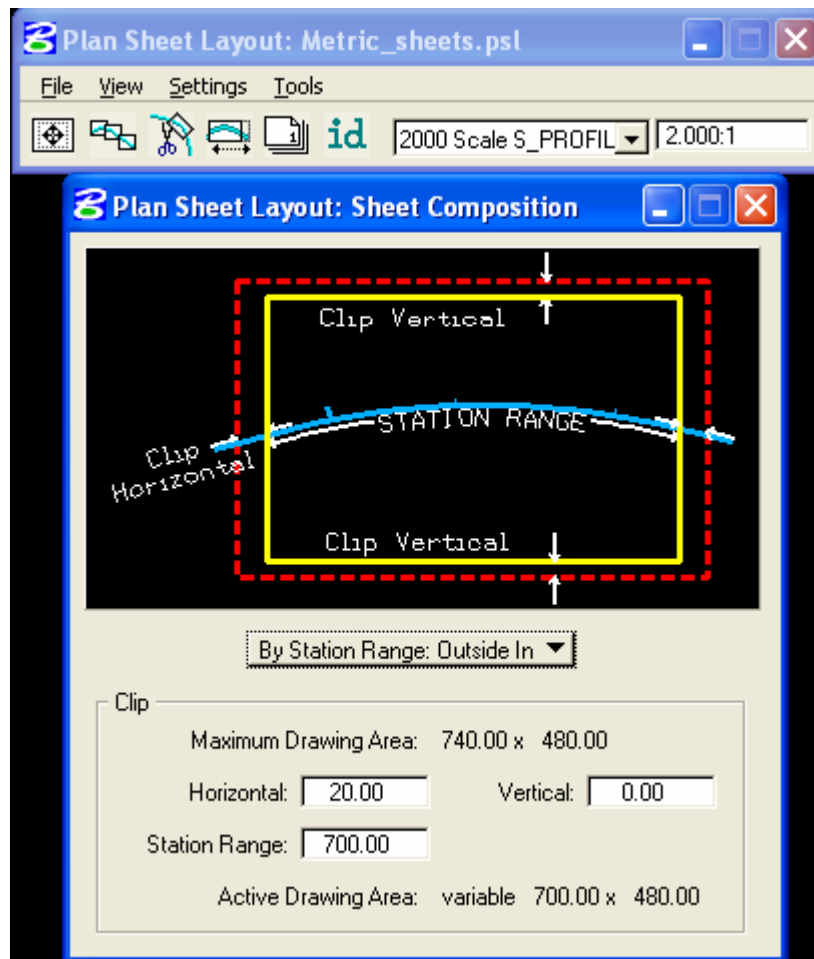
2000 Scale SINGLE PLAN





METRIC SHEET STYLE

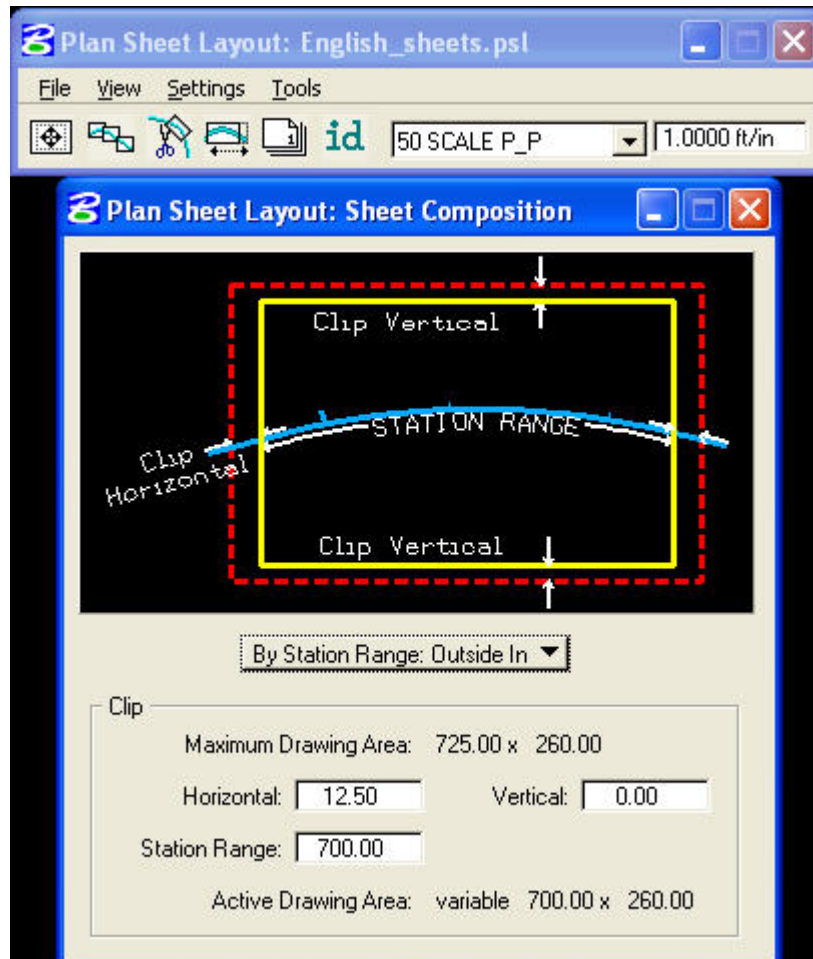
2000 Scale SINGLE PROFILE





ENGLISH SHEET STYLE

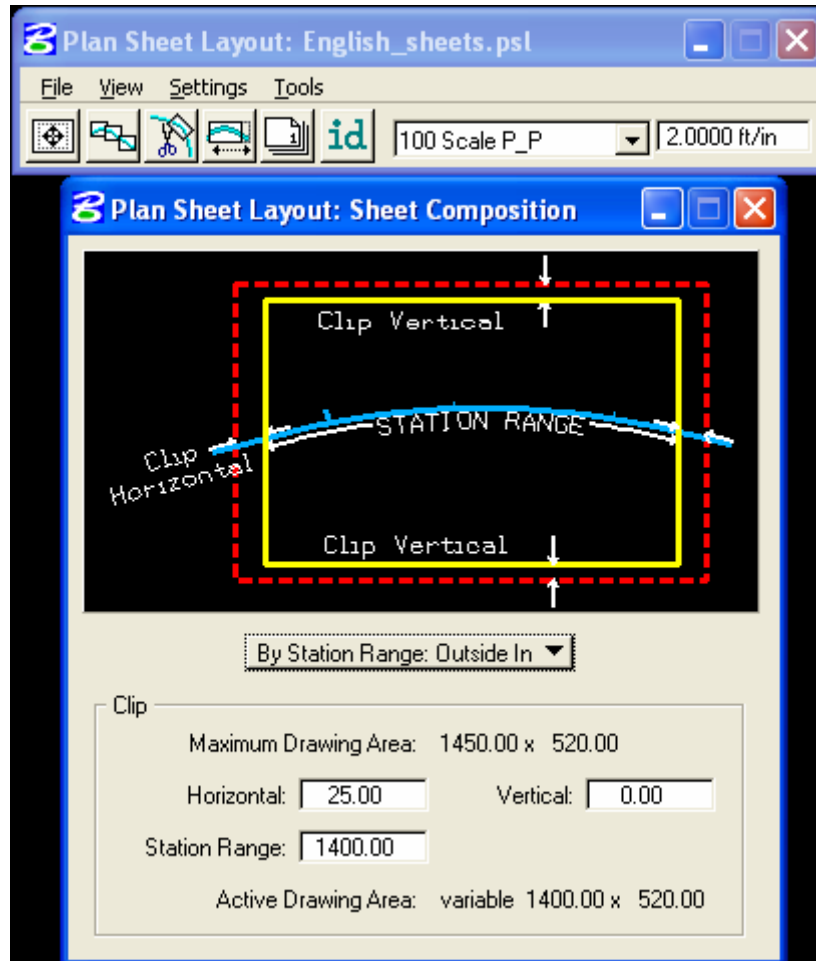
50 Scale P_P





ENGLISH SHEET STYLE

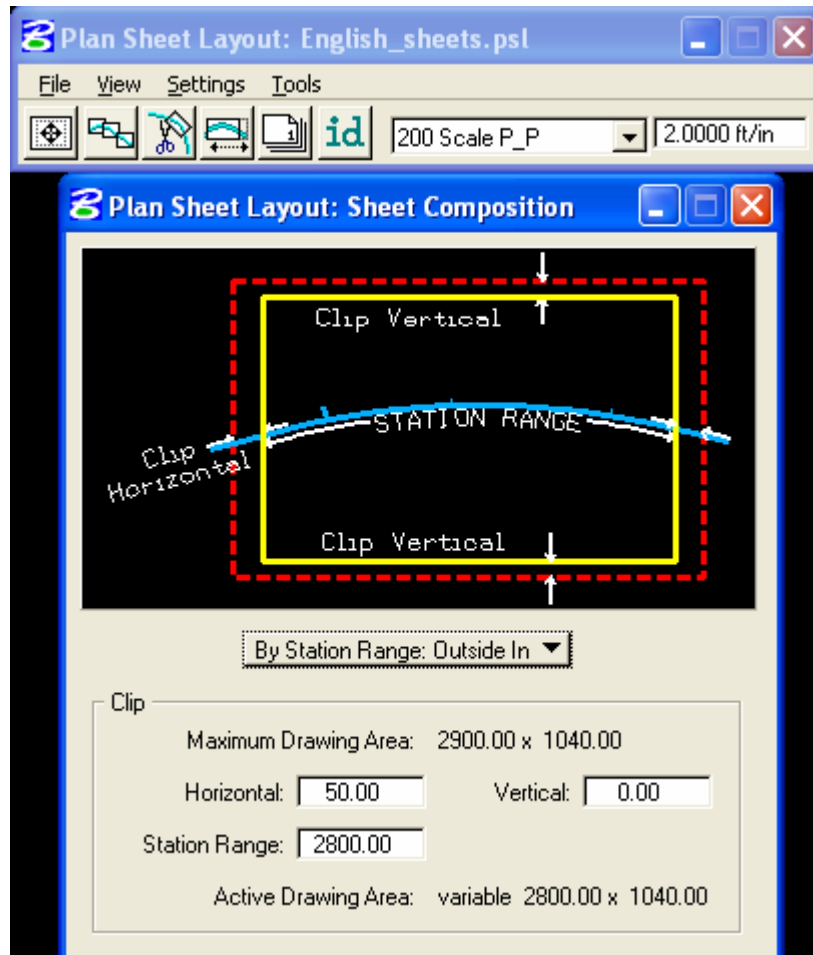
100 Scale P_P





ENGLISH SHEET STYLE

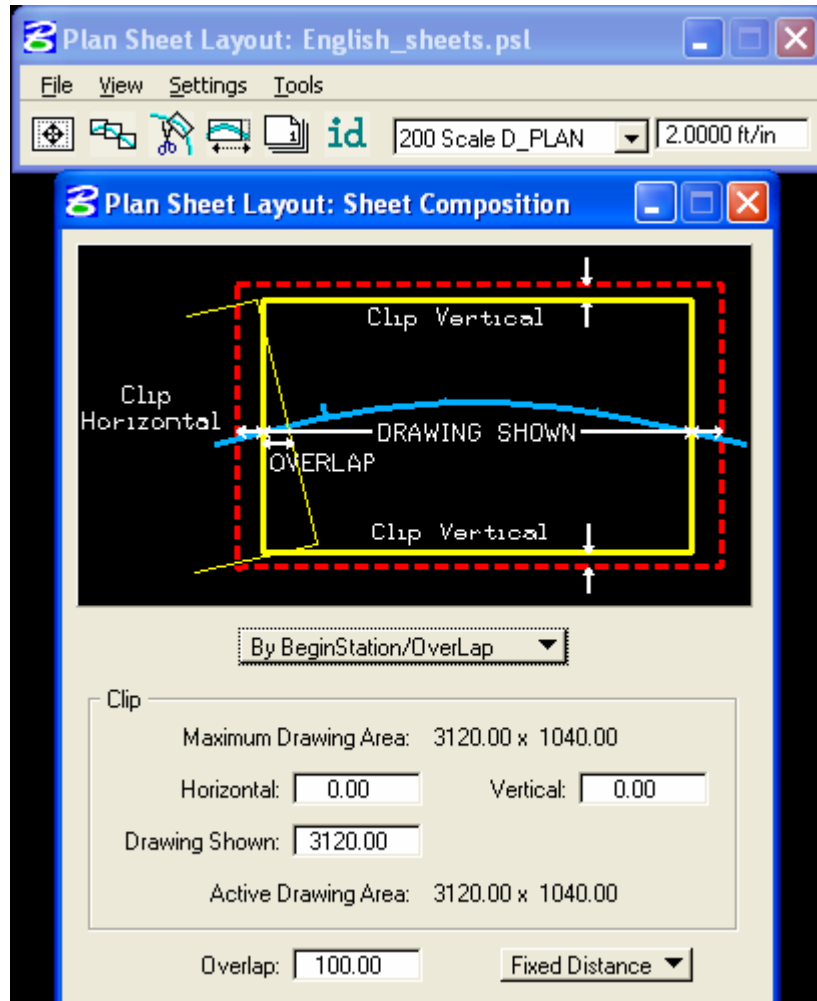
200 Scale P_P





ENGLISH SHEET STYLE

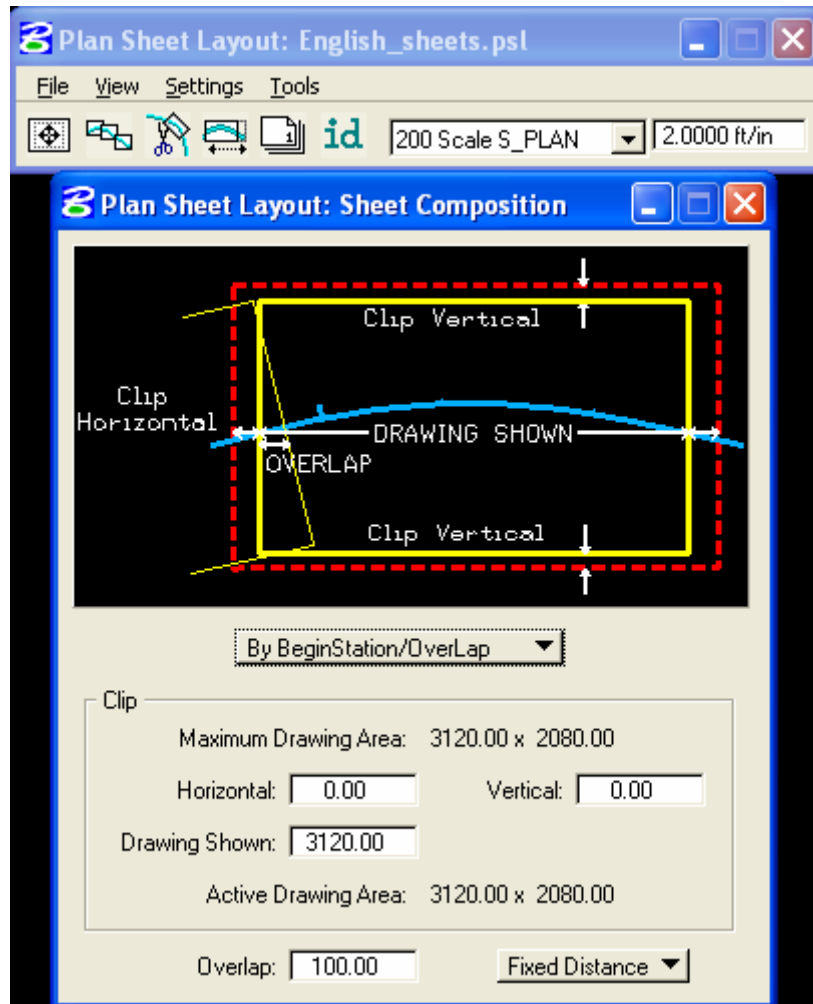
200 Scale DOUBLE PLAN





ENGLISH SHEET STYLE

200 Scale SINGLE PLAN





ENGLISH SHEET STYLE

200 Scale SINGLE PROFILE

